UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,863	12/03/2004	Martin Willem Klomp	PTT-199(402865US)	8551

7265 7590 07/21/2005

MICHAELSON AND WALLACE
PARKWAY 109 OFFICE CENTER
328 NEWMAN SPRINGS RD
P O BOX 8489
RED BANK, NJ 07701

EXAMINER	
KHAN, SUHAIL	

ART UNIT	PAPER NUMBER
2686	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/516,863	KLOMP ET AL.	
	Examiner	Art Unit	
	Suhail Khan	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/3/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/3/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. The term 'preferably' is used in claims 13 and 14. Replacement of "in the range of 8 to 12 degrees, preferably 10 degrees." with --10 degrees-- in claim 13 and replacement of "in the range of 3 to 6.5 degrees, preferably 5 degrees" with --5 degrees-- in claim 14 is requested in order to provide clarity and precision to the claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-25 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6088002 to Johnson et al., in view of U.S. Patent App. Pub. No. 2003/0003959 to Tsui et al.

Referring to **claim 1**, Johnson et al. disclose a telecommunications radio system for mobile communication services (col 3, lines 1-5, radio, antenna system) comprising at least one base station (col 1, lines 30-33, base stations; col 4, lines 1-5, radio tower), the base station comprising at least two antennas (col 4, lines 5-10, dipole antenna elements), the base station being located at a site (col 2, lines 56-60, tower, antenna installation at each site), the base station covering an area (col 2, lines 60-67, range), wherein the site is a high structure with a height of at least 50 m from erection ground (col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied and made gr
equal to 50 m), the base station is located on the site at a height of at least 50 m f

ground (col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the tower/base station height is greater than or equal to 50 m) and the at least two antennas are arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction). Johnson et al. do not disclose the coverage area being subdivided into a multitude of sectors by the at least two antennas. The examiner maintains that the concept of the coverage area being subdivided into a multitude of sectors by the at least two antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a telecommunications radio system for mobile communication services comprising at least one base station, the base station comprising at least two antennas, the base station being located at a site, the base station covering an area, the area being subdivided into a multitude of sectors by the at least two antennas, wherein the site is a high structure with a height of at least 50 m from erection ground, the base station is located on the site at a height of at least 50 m from erection ground and the at least two antennas are arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 2**, Johnson et al. disclose a telecommunications radio system according to claim 1 in which the height of the site is the range of 90m to 320m from erection ground and the base station is located on the site at a height in the range of 90m to 320m from erection ground (col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the tower/base station height is in the 90m to 320m range).

Referring to **claim 3**, Johnson et al. disclose a telecommunications radio system according to claim 2 (col 3, lines 1-5, radio, antenna system). Johnson et al. do not disclose that each sector is served by a separate antenna. The examiner maintains that the concept that each sector is served by a separate antenna was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show a phased array multiple antenna sectors (page 2, paragraph 28; phased array entails sectors respective to antennas).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show each sector served by a separate antenna, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 4**, Johnson et al. disclose a telecommunications radio system according to claim 2 (col 3, lines 1-5, radio, antenna system) and phased array antenna (col 3, lines 66-67). Johnson et al. do not disclose that the multitude of sectors are served by one or more phase-controlled antenna. The examiner maintains that the concept that multitude of sectors are served by one or more phase-controlled antenna was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show that the antenna pattern may be formed by a single antenna or a phased array (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show that the multitude of sectors are served by one or more phase-controlled antenna, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 5**, Johnson et al. disclose a telecommunications radio system according to claim 4 (col 3, lines 1-5, radio, antenna system). Johnson et al. do not disclose that the system comprises at least six sectors. The examiner maintains that the concept of having at least six sectors was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show 24 sectors (page 2, paragraph 28, 24 sectors is greater than the claim limitation of at least 6 sectors).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show telecommunications radio system with at least six sectors, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 6**, Johnson et al. disclose a telecommunications radio system according to claim 4 (col 3, lines 1-5, radio, antenna system). Johnson et al. do not disclose that the system comprises at least 12 sectors. The examiner maintains that the concept of having at least 12 sectors was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show 24 sectors (page 2, paragraph 28, 24 sectors is greater than the claim limitation of at least 12 sectors).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show telecommunications radio system with at least 12 sectors, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 7**, Johnson et al. disclose a telecommunications radio system according to claim 4 (col 3, lines 1-5, radio, antenna system). Johnson et al. do not disclose that the system comprises at least 24 sectors. The examiner maintains that the concept of having at least 24 sectors was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show 24 sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show telecommunications radio system with at least 24 sectors, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 8**, Johnson et al. disclose a telecommunications radio system according to claim 4 (col 3, lines 1-5, radio, antenna system). Johnson et al. do not disclose that the system comprises at least 48 sectors. The examiner maintains that the concept of having at least 48 sectors was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show 72 beams over 360 degrees of azimuthal coverage (page 3, paragraph 34, 72 beams form 72 sectors, 72 sectors is greater than the claim limitation of at least 48 sectors).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show telecommunications radio system with at least 48

sectors, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 9**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 8 in which one or more antennas are arranged second concentric ring in a second orthogonal plane of the longitudinal axis of the site, the second concentric ring having a larger diameter than the first concentric ring (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction).

Referring to **claim 10**, Johnson et al. disclose a telecommunications radio system according to claim 9 (col 3, lines 1-5, radio, antenna system) in which the first orthogonal plane is the same as the second orthogonal plane col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction).

Referring to **claim 11**, Johnson et al. disclose a telecommunications radio system according to claim 10 (col 3, lines 1-5, radio, antenna system) in which the number of antennas on the second concentric ring is larger than the number of antennas on the first concentric ring (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction; col 2, lines 50-54, modifiable variants, thus antennas can be added if needed).

Referring to **claim 12**, Johnson et al. disclose a telecommunications radio system according to claim 11 (col 3, lines 1-5, radio, antenna system) in which the horizontal angular range the antennas on the second concentric ring is smaller than the horizontal angular range of the antennas on the first concentric ring (col 2, lines 60-67, requirements may vary with different capacity or range or beam tilts; col 4, lines 32-35, different patterns are provided for antenna system to provide different angles at the connection, thus angles can be varied to have horizontal angular range of the antennas on the second concentric ring smaller than that on the first concentric ring).

Referring to **claim 13**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 12 in which the vertical aperture angle of the antennas on the first concentric ring is the range of 8 to 12 degrees, preferably 10 degrees (col 2, lines 60-67, requirements may vary with different capacity or range or beam tilts; col 4, lines 32-35, different patterns are provided for antenna system to provide different angles at the connection, thus angles can be varied).

Referring to **claim 14**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 13 in which the vertical aperture angle of the antennas on the second concentric ring is in the range of 3 to 6.5 degrees, preferably 5 degrees (col 2, lines 60-67, requirements may vary with different capacity or range or beam tilts; col 4, lines 32-35, different patterns are provided for antenna system to provide different angles at the connection, thus angles can be varied).

Referring to **claim 15**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 14; varying requirements with different

capacity or range or beam tilts (col 2, lines 60-67) and that the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction (col 3, lines 10-12). Johnson et al. do not disclose that the area is subdivided into sectors by antennas on the first concentric ring and 72 sectors by antennas on the second concentric ring. The examiner maintains that the concept of the area being subdivided into sectors by antennas on the first concentric ring and 72 sectors by antennas on the second concentric ring was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show 72 beams over 360 degrees of azimuthal coverage (page 3, paragraph 34, 72 beams form 72 sectors).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show the telecommunications radio system in which the area is being subdivided into sectors by antennas on the first concentric ring and 72 sectors by antennas on the second concentric ring, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 16**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 15 and antennas with modifiable variants (col 2, lines 35-40; col 2, lines 50-55). Johnson et al. do not disclose that the shape and/or size of one or more sectors can be changed by switching on or off one or more antennas. The examiner maintains that the concept that the shape and/or size of one or more sectors can be changed by switching on or off one or more antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show one or more antennas (page 2, paragraph 20) and an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a telecommunications radio system in which the shape and/or size of one or more sectors can be changed by switching on or off one or more antennas (antennas are modifiable, sectors depend on antennas), as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 17**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 15 and antennas with modifiable variants (col 2, lines 35-40; col 2, lines 50-55). Johnson et al. do not disclose that the shape and/or size of one or more sectors can be changed by changing the horizontal angular range of one or more antennas. The examiner maintains that the concept that the shape and/or size of one or more sectors can be changed by changing the horizontal angular range of one or more antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show one or more antennas (page 2, paragraph 20) and an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a telecommunications radio system in which the shape and/or size of one or more sectors can be changed by changing the horizontal angular range of one or more antennas (antennas are modifiable, sectors depend on antennas), as taught

by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 18**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 15 and antennas with modifiable variants (col 2, lines 35-40; col 2, lines 50-55). Johnson et al. do not disclose that the shape and/or size of one or more sectors can be changed by changing the vertical aperture angle of one or more antennas. The examiner maintains that the concept that the shape and/or size of one or more sectors can be changed by changing the vertical aperture angle of one or more antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show one or more antennas (page 2, paragraph 20) and an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a telecommunications radio system in which the shape and/or size of one or more sectors can be changed by changing the vertical aperture angle of one or more antennas (antennas are modifiable, sectors depend on antennas), as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 19**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 18 in which at least one antenna is arranged in a third orthogonal plane of the longitudinal axis of the site to cover an area in the proximity zone of the site, the third orthogonal plane being located below a height of 50m (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer

beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction; col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the third orthogonal plane is located below a height of 50m).

Referring to **claim 20**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 19 and modifiable variations based on traffic demand (col 2, lines 50-55) and different requirements like capacity (col 2, lines 63-66). Johnston et al. do not disclose that the total number of sectors needed to cover the area is calculated as a function of the size of each sector and the required field strength in each sector. The examiner maintains that the concept that the total number of sectors needed to cover the area is calculated as a function of the size of each sector and the required field strength in each sector was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show antennas (page 2, paragraph 20); an antenna pattern partitioned into sectors and the relation between sectors and frequency (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a telecommunications radio system in which the total number of sectors needed to cover the area is calculated as a function of the size of each sector and the required field strength in each sector as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 21**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 20 in which all antennas operate at one frequency (col 3, lines 1-4, coherent signal access).

Referring to **claim 22**, Johnson et al. disclose a telecommunications radio system (col 3, lines 1-5, radio, antenna system) according to claim 21 in which a conventional base station operating at a different frequency is placed within the area for handling local high volumes of traffic (col 3, lines 50-60, traffic demand changes, new antennas).

Referring to **claim 23**, Johnson et al. disclose a base station for use in a telecommunications radio system (col 3, lines 1-5, radio, antenna system; col 2, lines 56-60, tower, antenna installation at each site), the base station comprising at least two antennas (col 4, lines 5-10, dipole antenna elements), the base station being located at a site (col 2, lines 56-60, tower, antenna installation at each site), the base station covering an area (col 2, lines 60-67, range), wherein the site is a high structure with a height of at least 50 m from erection ground (col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied and made greater than or equal to 50 m), the base station is located on the site at a height of at least 50m from erection ground (col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the tower/base station height is greater than or equal to 50 m) and the at least two antennas are arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction). Johnson et al. do

not disclose the coverage area being subdivided into a multitude of sectors by the at least two antennas. The examiner maintains that the concept of the coverage area being subdivided into a multitude of sectors by the at least two antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a base station for use in a telecommunications radio system, the base station comprising at least two antennas, the base station being located at a site, the base station covering an area, the area being subdivided into a multitude of sectors by the at least two antennas, wherein the site is a high structure with a height of at least 50 m from erection ground, the base station is located on the site at a height of at least 50m from erection ground and the at least two antennas are arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 24**, Johnson et al. disclose an antenna for use in a base station for use in a telecommunications radio system (col 3, lines 1-5, radio, antenna system) for mobile communication services, the base station being located at a site (col 2, lines 56-60, tower, antenna installation at each site), the base station covering an area (col 2, lines 60-67, range), wherein the site is a high structure with a height of at least 50m from erection ground (col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of

the structure can be varied and made greater than or equal to 50 m), the base station is located on the site at a height of at least 50m from erection ground (col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the tower/base station height is greater than or equal to 50 m) and the antenna and at least one other antenna being arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction). Johnson et al. do not disclose the coverage area being subdivided into a multitude of sectors by the at least two antennas. The examiner maintains that the concept of the coverage area being subdivided into a multitude of sectors by the at least two antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show an antenna for use in a base station for use in a telecommunications radio system for mobile communication services, the base station being located at a site, the base station covering an area, the area being subdivided into a multitude of sectors, at least one of the sectors being served by the antenna, wherein the site is a high structure with a height of at least 50m from erection ground, the base station is located on the site at a height of at least 50m from erection ground and the antenna and at least one other antenna being arranged in a first concentric ring in a first orthogonal plane of the longitudinal axis of the site, as

taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Referring to **claim 25**, Johnson et al. disclose a mobile network comprising a telecommunications radio system for mobile communication services (col 3, lines 1-5, radio, antenna system; col 1, lines 26-29, cellular mobile telephony) comprising at least one base station (col 2, lines 56-60, tower), the base station comprising at least two antennas (col 4, lines 5-10, dipole antenna elements), the base station being located at a site (col 2, lines 56-60, tower, antenna installation at each site), the base station covering an area (col 2, lines 60-67, range), wherein the site is a high structure with a height of at least 50m from erection ground (col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied and made greater than or equal to 50 m), the base station is located on the site at a height of at least 50m from erection ground (col 4, lines 1-5, radio tower, col 2, lines 43-49, antenna system is modular and can be configured, mast variants, thus the height of the structure can be varied so that the tower/base station height is greater than or equal to 50 m) and the at least two antennas are arranged a first concentric ring in a first orthogonal plane of the longitudinal axis of the site (col 3, lines 10-12, the outer ring of panels is connected to an inner ring, panel consists of vertical transformer beams on which dipole elements are mounted; orthogonal plane of the longitudinal axis implies vertical direction). Johnson et al. do not disclose the coverage area being subdivided into a multitude of sectors by the at least two antennas. The examiner maintains that the concept of the coverage area being subdivided into a multitude of sectors by the at least two antennas was well known in the art as taught by Tsui et al.

In a similar field of endeavor, Tsui et al. show an antenna pattern partitioned into sectors (page 2, paragraph 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Johnson et al. to show a mobile network comprising a telecommunications radio system for mobile communication services comprising at least one base station, the base station comprising at least two antennas, the base station being located at a site, the base station covering an area, the area being subdivided into a multitude of sectors by the at least two antennas, wherein the site is a high structure with a height of at least 50m from erection ground, the base station is located on the site at a height of at least 50m from erection ground and the at least two antennas are arranged a first concentric ring in a first orthogonal plane of the longitudinal axis of the site, as taught by Tsui et al., the motivation being sectorized planning helps in efficiently increasing downstream transmission capacity (page 2, paragraph 28).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to Base Station Antennas.

U.S. Pat. No. 5200759 to McGinnis

U.S. Pat. No. 6127988 to McNichol

U.S. Pat. No. 6166702 to Audenaerde et al.

U.S. Pat. No. 5757324 to Helms et al.

U.S. Pat. No. 5648787 to Ogot et al.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suhail Khan whose telephone number is (571) 272-7910. The examiner can normally be reached on M-F from 8 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold, can be reached at (571) 272-7905.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).
sk

CHARLES APPIAH
PRIMARY EXAMINER